Applicants is a significantly different chemical reaction from the microemulsion polymerization reaction taught by Lu et al. Likewise, a skilled artisan would recognize that the cationic acrylic colloidal dispersion polymer compositions that result from the Applicants' emulsion polymerization reaction substantially differ from the bicontinuous structured polymer composites which are formed from Lu et al.'s microemulsion polymerization reaction.

As noted by Dr. Sisson, it is well known to those skilled in the art that microemulsions and emulsions have different physical and chemical characteristics. In the Hypertext Guide to Terms in Colloid and Polymer Science (submitted in the accompanying Information Disclosure Statement), Dr. Adrian R. Rennie defines an "emulsion" as being:

> A collodial dispersion of one liquid in another liquid (usually an oil and water). It is often 'stabilised' with a surfactant or with polymers. Emulsions are not usually truly stable but may be metastable. This contrasts with microemulsions. (emphasis added)

Dr. Rennie further defines a "microemulsion" as being:

> A collodial dispersion of a liquid in another liquid (usually an oil and water) typically with a droplet size of a few nm. It is stabilised with surfactants and cosurfactants. In contrast to emulsions, microemulsions can be truly stable in a thermodynamic sense. (emphasis added)

Indeed, Lu et al. explains some of the differences between these types of emulsions (col. 1, line 23 – col. 2, line 63) and specifically states (col. 1, lines 34–35) that: "Microemulsions differ from macroemulsions and miniemulsions."

Lu et al. teaches that, "In bicontinuous microemulsions both the oil and water phases coexist in interconnected continuous domains with surfactant molecules located at the interface" (col. 1, lines 49-51). The oil phase is hydrophobic in nature, while the water phase is hydrophilic. As noted by Dr. Sisson, one skilled in the art would recognize that the interconnected continuous domains of the hydrophobic and hydrophilic phases of the microemulsion would, upon polymerization, result in the formation of a polymer having both hydrophobic and hydrophilic properties (col. 4, lines 18-34). Indeed, the stated purpose of Lu et al. is to produce such "a polymer having two solid, substantially nonporous bicontinuous phases" (col. 3, lines 1-8).

In contrast, as Dr. Sisson notes a skilled artisan would understand that the Applicants' teach a conventional emulsion polymerization reaction that has discrete particles larger in size than those

employed in microemulsions. This polymerization reaction produces an emulsion polymerization product (i.e., a latex) containing discrete polymer particles. The pH of the emulsion polymerization product is subsequently adjusted to swell the particles so that they are no longer discrete, but are dispersed in water. This one-phase homogeneous cationic acrylic colloidal dispersion polymer composition can then be employed as a one-phase binder for ink jet receptive coatings.

As noted by Dr. Sisson, one skilled in the art would recognize that the Applicants' teach a one-phase homogeneous cationic acrylic colloidal dispersion polymer composition. This differs significantly from the two-phase bicontinuous polymer composite taught by Lu et al. Moreover, the Applicants' polymer composition is hydrophilic in nature and suitable for use with water-based ink jet coatings. In contrast, Lu et al. teaches a substantially nonporous polymer composite which contains hydrophobic phase.

Therefore, for the above-noted reasons it is respectfully submitted that claims 1-12 are not anticipated under 35 U.S.C. 102(b).

Claims 1 and 12-18 stand rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent No. 5,521,229 to Lu et al. and further in view of 5,372,884 to Abe et al. The rejection is respectfully traversed.

In addition to the preceding comments regarding Lu et al., it should be noted that the substantially nonporous and hydrophobic phase properties of Lu et al.'s polymer composites would, as stated Dr. Sisson, teach those skilled in the art away from any attempted use of Lu et al.'s polymer composites as additives for water-based ink jet coatings.

Abe et al. teaches and claims the use of colloidal silica which has been coated with a cation-modifer, preferably at least one hydrous metal oxide selected from the group consisting of hydrous aluminum oxide, hydrous zirconium oxide, and hydrous tin oxide (col. 2, lines 48-55, claims 1 and 2). As noted by Dr. Sisson, a skilled artisan would understand that Abe et al.'s compounds are pigment-like in nature. Moreover, these compounds are significantly different from the cationic organic polymer compositions taught and claimed by the Applicants (which can be employed as coating binders).

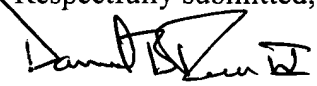
As stated by Dr. Sisson, the teachings contained in Lu et al. combined with the teachings contained in Abe et al. would not teach or suggest to one skilled in the art the Applicants' cationic

acrylic colloidal dispersion polymer compositions.

Therefore, for the reasons stated, it is respectfully submitted that the claimed invention is patentable and that the claims, as amended, are in condition for allowance. Such action by the Examiner is earnestly solicited.

No additional fees are believed to be due in connection with the filing of this amendment and response. Should it be determined that additional fees are due and payable, the Commissioner is authorized to charge any required fees or credit any overpayment to the assignee's Deposit Account No. 23-1160.

Respectfully submitted,



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Attachment

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Version with markings to show changes made to amended Claims

5. (amended) The cationic acrylic colloidal dispersion polymer composition of claim 1 wherein the ethylenically unsaturated monomer containing at least one [quaternary ammonium] hydroxyl group is a member selected from the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxybutyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, butanediol monovinyl ether, allyl alcohol, and combinations thereof.